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OREGON FLORA
Newsletter

VOLUME 9, NUMBER 1 OREGON STATE UNIVERSITY FEBRUARY 2003

Albert N. Steward (1897-1959): twenty-six years in China and Curator of the OSU Herbarium

by Rebecca Huot

Dr. Albert Newton Steward lived in China as an educational missionary from 1921 to 1950. He founded the Department of Botany at Nan ching University, where he taught botany and helped local farmers. After the infamous Japanese Rape of Nan ching, Steward sent his wife and children to America, but chose to remain behind to assist the beleaguered Chinese. During WWII he spent three years in an internment camp, after which he lived several more years in Communist China. Upon his return to America in 1950, he became Associate Professor of Botany, Curator of the Herbarium, and Associate Botanist at the Agricultural Experiment Station at Oregon State College (OSC), where he remained until his death in 1959. Among Steward's botanical publications are two major keys: *Manual of Vascular Plants of the Lower Yangtze Valley, China* (1958) and *Aquatic Plants of the Pacific Northwest with Vegetative Keys* (1960).

Whether tramping through China's Midwest provinces of Kweichow and Kwangsi with his eldest son to gather herbarium specimens, or shepherding his youngest son, who suffered from respiratory problems, to Joshua Tree National Park and the Salton Sea in Southern California to "bake the bugs out of him,"

See Steward, page 4

Photo: OSU Archives

Every summer Steward participated as the expert in a "Stump the Expert Contest," where he was confronted with peculiar plants. He never met a species he could not identify and each year he received a prize, his favorite being the straw hat worn here at a 1954 Range Management Field Camp.

A new plant family for Oregon

by Henrietta L. Chambers

As I began working on the genus *Parnassia* for the checklist, I was mystified that I could not find it in the *Intermountain Flora*. Naturally I looked in the Saxifragaceae, and when it was not there, I assumed the genus was absent in the intermountain region. However, in the herbarium I found that we had specimens from Steens Mountain, which is part of that area. In the *Intermountain Flora* index, I found the family Parnassiaceae and lo, the mystery was solved! Noel and Patricia Holmgren did the treatment, and it is from this source that I have taken most of my information.

It is exciting when a new plant species is discovered in our state, as that may mean a new genus or family to add to our totals. That is not the case here. One species of *Parnassia* was collected on the northwest coast of America more than 200 years ago (1792) by Archibald Menzies and was named *Parnassia fimbriata* by K. D. Koenig in 1804. The genus was placed in the family Parnassiaceae by Leroy Abrams in his *Illustrated Flora of the Pacific States*. Abrams was probably influenced by Britton and Brown's *Illustrated Flora of the United States and Canada* (1913). Recent studies by D. R. Morgan and D. E. Soltis (1993), based on *rbcL* sequence data, show that *Parnassia* is very distant from other genera in the Saxifragaceae. Thus I am following the lead of Abrams and the Holmgrens by placing it in its own family.

We have three species of grass-of-Parnassus in Oregon. The common name is derived from Mount Parnassus in central Greece and was used for a plant reported by Dioscorides, the famous first century Greek physician. That plant was probably *P. palustris*, the species with the widest distribution in the genus. The most common and widespread taxon in western North America is *Parnassia fimbriata* (fringed grass-of-Parnassus), which occurs throughout western North America from Alaska as far south as New Mexico. In Oregon, it is found from the central Cascades to the Wallowa Mountains. It grows in meadows, wooded seeps, along stream banks and lakeshores. The species name comes from the numerous petaloid protuberances (fimbriae), which are 1-5 mm long and arise on the petal margin from the base of the petals to the middle. The oldest collection of this species in the OSU Herbarium was made in 1906 at Updyke Falls, Deschutes County, near Tumalo. There are many collections from the Wallowa Mountains at 5200 to7200 foot elevations.

Of the three Oregon parnassias, *P. fimbriata* has the broadest leaves. These are widest below the middle and cordate-based. The basal leaves have prominent veins and show a similarity to our native lily of the valley (*Maianthemum dilatatum*). A single small, sessile leaf appears near midlength on the flowering stem (see illustration). The 5 staminodes, which alternate with the stamens, are fleshy, club-shaped, and have short marginal protuberances, mainly near the top.

See Parnassia, page 2

Parnassia, continued from front page

California grass-of-Parnassus, *Parnassia californica*, occurs in northern California and in the Siskiyou Mountains of Josephine and possibly Curry Counties. It grows in swamps, moist woods, and darlingtonia bogs. The oldest collection is one by Thomas Howell in 1889; the label reads "Oregon Coast Mountains, 42nd parallel." *Parnassia californica* has ovate to lance-ovate leaves with tapering bases and a single flowering stalk with a small, sessile bract above mid-length. The staminodes have numerous long, slender filaments with yellow, glandular tips. The most obvious difference that separates *P. californica* from *P. fimbriata* and *P. cirrata*, is that its petals lack fimbriae.

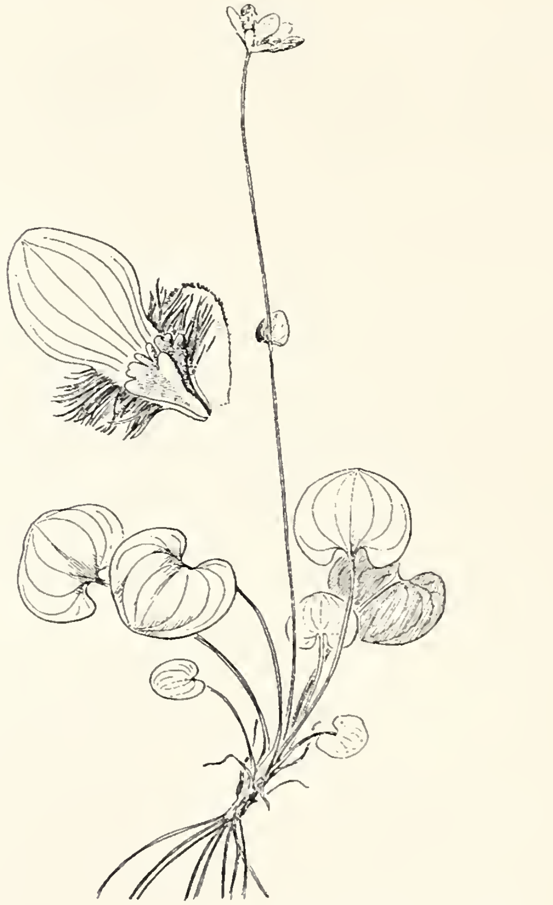
Cascade grass-of-Parnassus, *Parnassia cirrata* var. *intermedia* grows in the Cascades of southern Washington and Oregon, Steens Mountain, southern Idaho, and north and central Nevada. It too likes wet habitats such as bogs, mires, grassy lake borders, shaded stream banks, and wet meadows. It combines some of the features of the above-mentioned species: it has the fimbriate petals of *P. fimbriata*, and the staminodes with long slender filaments topped with glands which are characteristic of *P. californica*. The oldest collection in the OSU Herbarium was by L. F. Henderson in 1884, in wet sphagnum at Lost Lake in Hood River County. The typical variety has a more southerly distribution in the San Bernardino and San Gabriel Mountains of California.

Another western species, *P. kotzebuei*, does not occur in Oregon, but is found in nearby states. The species is circumboreal in its distribution and occurs as far south as the mountain regions of Washington, Idaho and Montana. The OSU Herbarium has several collections from Alaska, and they show a plant with much smaller flowers and leaves than our Oregon taxa.

Key to Oregon *Parnassia*

1. Petals with entire margins; leaves tapering at base; staminodes with 15 or more globose-tipped filaments . . . . *P. californica*
1. Petals with marginal fimbriae; leaves with cordate bases; staminodes various
  2. Staminodes with 7-10 slender globose-tipped filaments . . . . *P. cirrata* var. *intermedia*
  2. Staminodes fleshy, club-shaped with short marginal protuberances, not globose-tipped . . . . *P. fimbriata*

Reference: Phylogenic relationships among members of Saxifragaceae sensu latu *based on* rbcL *sequence data.* Ann. Missouri Bot. Gard. *80: 631-660. 1993.*



Fringed grass-of-Parnassus (Parnassia fimbriata). *Illustration by Jeanne R. Janish from Hitchcock, et al.,* Vascular Plants of the Pacific Northwest. *Courtesy of University of Washington Press.*

Erythronium oregonum logo and masthead designed by Tanya Harvey.

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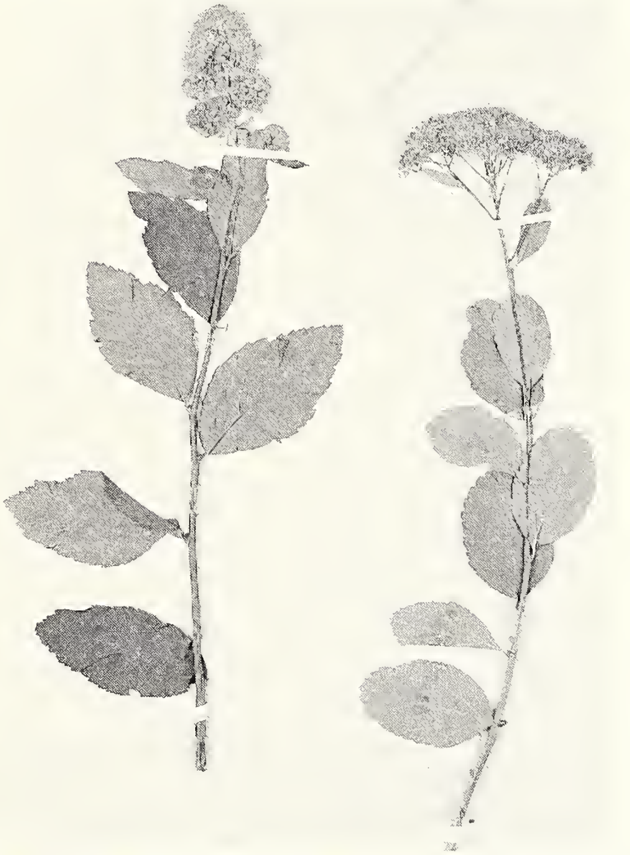
New names and hybrids among Oregon spiraeas

by Kenton L. Chambers

It is getting to be an unusual event when an established name for a well-known species is overthrown by nomenclatural technicalities. This happened recently, however, to the common Oregon subalpine pink spiraea, *Spiraea densiflora* Nutt. It had been overlooked that, when John Torrey and Asa Gray published this name in 1840, they only mentioned it in passing and did not accept it as a new species. The name is therefore invalid, and we must adopt the later name *Spiraea splendens* Baumann ex K. Koch, published in 1875 and based on cultivated plants grown in Germany from seeds collected in California.

Further difficulties with *Spiraea splendens* arise when one tries to apply the varietal distinctions proposed by C. Leo Hitchcock in *Flora of the Pacific Northwest.* Hitchcock named two varieties of "*Spiraea densiflora*" based on the fine puberulence seen on the leaves and inflorescence of some individuals—his "var. *densiflora*" being the nearly glabrous form, and "var. *splendens*" being the more puberulent one. When this varietal concept was transferred to *Spiraea splendens,* the varieties took the names "var. *rosea*" and "var. *splendens*," respectively. Having recently examined well over 100 herbarium specimens of *S. splendens*, I am convinced that such pubescence differences are insignificant; the feature is minute, variable, and has no geographical coherence. We need not trouble ourselves with varietal names in this species.



Spiraea xhitchockii, *left, and* S. splendens, *right, collected together and mounted on the same sheet in the University of Oregon Herbarium. The collection is by Douglas C. Ingram, August 5, 1924, from a "wet meadow, Huckleberry Lake, Umpqua Forest, altitude 5000 feet." The two specimens were identified as* Spiraea densiflora *by L.F. Henderson.*

Another species of Oregon spiraea recognized in *Flora of the Pacific Northwest* is *Spiraea pyramidata* Greene. It was suspected by Morton Peck, P. A. Rydberg, and others (see Peck's *Manual of the Higher Plants of Oregon*, ed. 2, pg. 421) that this is a hybrid taxon rather than a good species, and that it refers to sporadic crosses between the white-flowered *Spiraea betulifolia* Pall. (shinyleaf spiraea) and the pink-flowered *S. douglasii* Hook. (Douglas' spiraea). This hypothesis was confirmed by William J. Hess in 1969 (*Sida* 3:298-308), who found that *S. xpyramidata* plants are partially pollen-sterile and occur only in disturbed habitats in contact with one or both of the parental species. The hybrids are recognized by their pyramid-shaped inflorescence, about as wide as high, versus the flat-topped inflorescence of *S. betulifolia* and the narrow, elongated one of *S. douglasii*. *Spiraea xpyramidata* has scattered occurrences from the northern Willamette Valley and the Columbia Gorge east to Idaho and north to British Columbia. Its flowers may be white or pink.

I was led to this study of *Spiraea* by the reported occurrence in Lane County of a second hybrid spiraea, *Spiraea xhitchcockii* W. J. Hess & N. A. Stoynoff. Discovered near Scott Lake on the McKenzie Pass, this hybrid was proposed by Hess and Stoynoff to be a cross between *Spiraea splendens* "var. *rosea*" and *S. douglasii* var. *menziesii* (Hook.) Presl. It has pink flowers and an inflorescence intermediate between the rounded, sub-capitate one of *S. splendens* and the narrow, elongated one of *S. douglasii*, and it was found growing together with these two species at the discovery site. We intend to use the name *S. xhitchcockii* for any hybrid between the two species, regardless of what varieties one thinks the parents represent at a given locale. In my review of our herbarium's holdings of Oregon spiraeas, I found four additional specimens of this previously unrecognized hybrid—one from the Santiam Pass, Jefferson County, two from Crater Lake National Park, and one from Huckleberry Lake on the Rogue/Umpqua Divide, Douglas County. The accompanying illustration shows the latter hybrid and the *S. splendens* parent growing with it. A further oddity about this hybrid is that the name *Spiraea subvillosa* Rydb. was at one time thought to apply to it (see the Morton Peck reference, above). However, I examined the type specimen of that name, collected in the Columbia Gorge by Thomas Howell, and found it to be a plant of *S. xpyramidata* instead.

Since I have led you this far into the mysteries of Oregon *Spiraea*, let me mention one final peculiarity involving our most common species, *Spiraea douglasii*. This well-known plant is generally accepted as having two varieties, var. *douglasii* and var. *menziesii*, differing by a conspicuous feature of leaf pubescence, namely dense but minute woolly hairs (tomentum) on the underside of var. *douglasii* leaves. Tomentulose-leaved var. *douglasii* is common west of the Cascades in Oregon but ranges east of the mountains to Lake County in the south and Wasco County in the north. Plants with glabrous leaves, representing var. *menziesii*, extend from central Oregon east to Idaho and north to Alaska but are also found in the Willamette Valley. These latter populations may be intermediate toward var. *douglasii* in an unusual way—namely, their leaf pubescence is developmentally correlated such that the lower leaves of the stem are glabrous below, while the upper leaves, especially those near the inflorescence, are tomentulose! This characteristic was noted 64 years ago by Louis Henderson, in annotations that he wrote on herbarium specimens collected at Big Fall Creek, Lane County.

Similar plants occur near Corvallis and on the coast; instead of being intermediate throughout, these putative hybrids are *menziesii*-like in their lower leaves and *douglasii*-like in their upper ones. It appears that gene expression—"pubescence genes" being turned on or off—is affected by cues from the environment or by the stage of leaf development. The botanical explorer Elihu Hall, who visited the Willamette Valley in 1871, reported his observation (*Bot. Gaz.* 2: 86. 1877) that "...(t)his [var. *menziesii*] is evidently the same as the foregoing [*S. douglasii*], modified in its characters solely by its habitat—when growing in water it becomes the smooth *S. menziesii*." Whatever the environmental and genetic complexities are, a taxonomic puzzle exists when it comes to attaching varietal names to these strange spiraeas.

Steward, continued from front page

or undertaking, as he described it, a "2,400 mile jaunt" through Washington, British Columbia and Idaho to survey aquatic plants, Steward was a dedicated botanist. He was also a humanitarian who earned the respect of many people from many different cultures.

Albert Steward was born in 1897 in Fullerton, California and spent his earliest boyhood there. The remainder of his childhood was spent in Okanogan County, Washington. He entered OSC in 1917 and completed his BS degree in Botany by special arrangement as a Botany instructor at the University of Montana. He married Celia B. Speak in 1918; they had six children.

Upon Steward's graduation in 1921, the couple joined the Methodist church and became educational missionaries to China where Steward established the Botany Department at the University of Nan ching and became its acting head. In 1926, the family returned to America to allow Steward to undertake graduate work at Harvard. There he earned both MS and PhD degrees with a focus on eastern Asian Polygonaceae. At Cambridge, money was tight and Albert worked nights as a janitor to support his wife and children. At harvest time, he and Celia shopped at outdoor markets at sundown to get the cheapest prices on produce which they then canned at home.

Returning to Nan ching in 1930, Steward became a professor of botany, establishing the herbarium and undertaking numerous collecting expeditions. During his 26 years in China, Steward collected more than 40,000 specimens. He set up plant exchanges between the University of Nan ching, Harvard, OSC and the University of California at Berkeley. The fact that these plants were safe in American herbaria became important for Steward during the later writing of his Lower Yangtze Valley flora, because, as he was leaving China for the last time in 1950, the Communists confiscated his collections.

Steward, who was fluent in Chinese, was fully integrated into the Chinese community. He enjoyed riding his pony Buckey into the countryside to talk with local farmers about crop improvement. By breeding various native varieties of rice, he was able to develop a strain that produced two crops a year rather then one, thus helping alleviate hunger in the area. Steward was a person of integrity and strong moral character who lived his life as a practicing Christian. Wishing to develop informal relationships outside the classroom, the Stewards held Saturday evening social gatherings for students and other young adults where hymns were sung, refreshments offered and intellectual discussions encouraged. But it was Celia who was crucial in developing social bridges and relationships since Albert was often socially shy.

The Japanese invaded China in 1937 bringing drastic changes for Steward. He sent his family to California but made the decision to remain behind. The botanist had not only embraced Chinese culture and gained the esteem of local farmers and intellectuals, but he earned the respect of the invaders as well. At one point, a vehicle carrying Japanese soccer players backed into the University gates damaging them. Steward, who was temporarily acting as head of the University, asked the Japanese to pay for repairs, but they refused. Although Japanese military officials became involved in the dispute, Steward continued to insist that they pay to mend the gates. In the end, the Japanese gave in and paid. This incident, along with his previous work in China, gained Steward the grudging respect of the invaders; therefore, instead of sending him to a detention center along with many other foreigners, they placed him under house arrest for several years.

After the attack on Pearl Harbor in 1941, the Japanese sent Albert to an internment camp in Shanghai. The inmates were not physically mistreated, although food was scarce and of poor quality. Steward, who loved the flavor of coffee, learned to "enjoy the aroma of coffee" so that others might drink his share, and he encouraged his fellow internees to leave insects in the flour because the women wasted time picking them out and they were a good source of protein! The Japanese essentially left the prisoners to themselves, so, to keep the adults and children occupied, Steward organized a high school and acted as superintendent and teacher of Biology. The school was so well taught that several graduates later gained admission to Oxford.

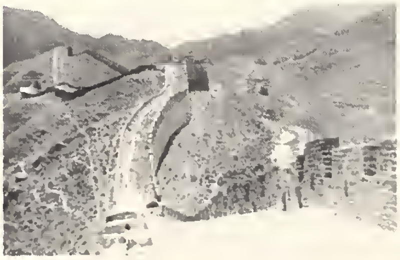
After the war, the Communists took over China and many missionaries left the country. Steward, however, chose to remain under the leftist regime. Until new missionaries could relieve him, the botanist held three administrative positions: overseeing Nan ching University, the University Hospital, and the University Theological Center. His aim was to keep the university running smoothly and to prevent important positions from falling into unfriendly hands. During this time, he traveled to America for a brief visit, returning to China in 1947 with Celia and the two youngest children who remained in China for a year. His youngest daughter, then ten years old, recalls riding a blue Schwinn bicycle on the Nan ching wall on Sundays with her father.

During his final two years in China, Steward played the critical role of protecting professors who had survived the Japanese invasion from the false accusations of the Red Chinese government which claimed that those who survived must have been traitors. However, by 1950 Steward's presence was becoming troublesome to the accused professors, and he was respectfully asked to leave. On his departure he was forced to give up his precious bundles of botanical specimens. After 26 years of service, Steward was unhappy to leave China in this manner, yet he hoped for a chance one day to return and retire in the country to which he had given so much.

When Stewart arrived in the United States in 1950, his eldest son recognized him only by his wicker suitcase! But the botanist quickly became immersed in academic life in the Pacific Northwest. Helen Gilkey, OSC Herbarium Curator, convinced Steward to continue his teaching and work at the college. He received a Guggenheim fellowship to complete research for his Flora of the Lower Yangtze. In 1951 Gilkey turned over the herbarium curatorship to Steward but remained as Professor Emerita, working with Steward on keys to the aquatic plants of the Northwest. One of his favorite activities at this time was his extension work where he excelled at weed identification. In 1958, after Celia had typed five drafts of the 621-page key, the Lower Yangtze Valley flora was published. It was the first flora of the area and was immediately put to use as a college textbook in China.

Steward maintained strong ties to friends and former students in China. He assisted Chinese students in America with recommendations and introductions, with obtaining and filling out forms, and with housing and employment. Albert Steward has been described as a quiet man of enormous integrity who cared about people. He passed away in 1959, never having returned to China, but leaving an admirable legacy that spanned continents.

Special thanks to Mrs. Elisabeth Steward and Drs. Ruth and Del Shirley for sharing their memories and Dr. Aaron Liston, for making available the newly discovered files of Dr. Albert Steward, my great-grandfather.



Albert Steward gazing over the Nan ching Wall, 1936.

Photo: Steward family

New Oregon records

by Scott Sundberg

Here we continue to report on plants that are "new" for Oregon.

Viburnum plicatum Thunb. (Caprifoliaceae)
Japanese snowball (exotic)

General distribution: Native to China and Japan, escaping cultivation in Massachusetts, Michigan, New York, Ohio and Pennsylvania (http://plants.usda.gov).

Oregon locality: Multnomah Co., moist wooded area immediately west of Roslyn Lake.

Comments: Japanese snowball is on the U.S. Forest Service Eastern Region list of plants of local concern that should be monitored (http://www.fs.fed.us/r9/wildlife/range/weed/index.htm). It is well established at the Roslyn Lake site in an area dominated mostly by native vegetation. Numerous mature shrubs over ten feet tall and many seedlings and saplings were seen. It appears to be invasive in this area. It was first collected outside of cultivation in Oregon by Scott Sundberg.

Illustration by Rena M. Schlachter.

Hardy fuchsia (Fuchsia magellanica).

Fuchsia magellanica Lam. (Onagraceae)
hardy fuchsia, carring flower (exotic)

General distribution: Native to Chile and Argentina, escaping cultivation in many areas, including several in California (Hrusa et al. 2002, *Madroño* 49:61-98).

Oregon localities: Coos Co., Coos Bay (Zika *et al.* 2000, *Madroño* 47:144-145); Curry Co., Brookings and along Route 635 near York Creek (Zika *et al.* 2000); Lane Co., about 5 miles north of Florence along Sutton Creek Road, about 1 air mile west of Hwy. 101 (Bruce Newhouse, pers. comm.); Tillamook Co., southeast of Pacific City along Brooten Road (Sundberg). Wes Messinger has also reported a fuchsia naturalizing along Highway 101 "at a creek mouth between Heceta Head and Cape Perpetua" that may be this species.

Comments: Hardy fuchsia likely occurs in many other areas along the Oregon coast where the climate is mild and apparently well-suited for the species. A quick search on the Internet revealed that there are concerns about it becoming, or it has already become, invasive in Hawaii, Australia, Madagascar, and the Commonwealth of the Northern Mariana Islands.

Hardy fuchsia is a deciduous shrub, clambering over other vegetation to a height of 6-10 feet, with opposite leaves, and numerous, drooping, red and purple flowers.

Vascular Plants of Lane County Oregon: additions, deletions, changes.

by Charlene Simpson

When the authors of Emerald Chapter NPSO's publication *Vascular Plants of Lane County Oregon: An Annotated Checklist* went to press in April 2002, we realized that our work was unfinished. Our introductory material warned readers that the Checklist was a "snapshot in time;" however, we did not anticipate how rapidly changes would occur. Within six months, additional information had arrived from three sources: new discoveries from 2002 field searches; new records as a result of the Oregon Flora Project's huge specimen county databasing effort this past summer; and ongoing research by Oregon Flora Checklist authors who continue to examine specimens and make taxonomic decisions.

We announced plans in October 2002 to make available periodic updates to the Lane Checklist. At that time Emerald Chapter NPSO posted a downloadable copy of the first installment of updates to their website. The update listed five new Lane County species based on field searches: *Cynoglossum officinale, Lathyrus sylvestris, Lathyrus tingitanus, Montia chamissoi,* and *Silene bernardina* var. *rigidula*. Eighteen additional species have been added as a result of Oregon Flora Project specimen databasing. One newly described hybrid, *Spiraea xhitchcockii*, is now included (see page 3). Three new taxa have been added as a result of corrections and annotations. And finally, there have been eight nomenclatural transfers, changes, and reassignments in the genera *Lotus, Lupinus and Spiraea*.

We are now at work on a second installment of updates and plan its release in March 2003. It also will be posted in downloadable format at Emerald Chapter's website and be available in hard copy at Emerald Chapter events. The next installment will list at least two new species, *Carex nebrascensis* and *Fuchsia magellanica*, from field searches, as well as changes based on recent Oregon Flora Project treatments of the Juncaceae and genera *Elmera, Galium,* and *Saxifraga*. Other new information will come from matches with Oregon Plant Atlas and Specimen databases. Lane Checklist group participants thank the Oregon Flora Project for ongoing support and encouragement as we continue to refine the Lane County Checklist. To view the current additions and/or to order a Checklist, please see the Emerald Chapter NPSO web site: www.EmeraldNPSO.org

Photo: Tanya Harvey

Silene bernardina *var.* rigidula *was added to the Lane Checklist as a result of field work in the Summer of 2002.*

Challenge drive a success!

by Linda Hardison

The generosity of hundreds who support the Oregon Flora Project has made our 2002-2003 Challenge Drive a great success! Our initial challenge was to raise $12,500 in 2002 in order to receive matching funds of $2500 from the NPSO and $10,000 from an anonymous donor. We handily met this goal, and thus qualified for the donor's offer of another $10,000 to match money raised in January 2003. I am delighted to announce that we also met the January goal, and have received a total of $35,802 in donations to the Challenge Drive! Coupled with the $22,500 of matching funds that stimulated this fundraising effort, the Oregon Flora Project begins the year with $58,302!

Our deepest thanks go to everyone who contributed. We received donations from seven NPSO chapters and 268 people, with many giving in both calendar years. Seventy-three donors were new to the Oregon Flora Project. During the Challenge Drive, several people asked to begin receiving the *Oregon Flora Newsletter*, which is now mailed to over 800 individuals, agencies, and libraries.

The Oregon Flora Project is approaching a phase in which several aspects of the project are being readied for use by the public. This has taken several years of hard, behind-the-scenes effort, and we constantly remember that the work could not have been accomplished without the financial support and volunteerism of many people. As you use the resources provided through the Oregon Flora Project, we hope that each of you feels a sense of satisfaction from the support that you have provided, and a sense of responsibility to continue that support until the Oregon Flora Project is in full bloom!

We sincerely thank each contributor, the NPSO, and our extremely generous anonymous donor for making this Challenge Drive a success.

Linda Hardison is one of our most valued volunteers. She serves as Chair of the Friends of the Oregon Flora Project, and she did the bulk of the work for nearly all aspects of the Challenge Drive, from planning and advertising the drive, to acknowledging donations. Thanks, Linda. We appreciate your hard work! — Scott Sundberg

Thanks

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Photos: Rhoda Love

Emerald Chapter members at Volunteer Work Day
Left to right: Ben Ross, Dave Predeek, Lynda Boyer, Joan Ojerio, Carol Link, Charlene Simpson.

Emerald Chapter, NPSO's Volunteer Work Day helps ready the online Atlas and Photo Gallery!

by Thea Cook and Scott Sundberg

On Saturday, January 25th, the Native Plant Society of Oregon's Emerald Chapter led a crew to Corvallis to take part in a volunteer work day for OFP, an annual tradition inspired by Dave Predeek, coordinator of the event. They were welcomed by the Flora project team, who eagerly anticipated the day as an opportunity to meet supporters, give a project update, get a lot of work done and enjoy a day spent with good people.

After an introduction by Scott Sundberg and Ann Willyard, we split into two groups. Dave, Jim Reed, Ben Ross, and Nate France tested the online Atlas and checked for dots on the distribution maps that looked suspicious (see map on page 8). This helped us find errors in the database and gave Scott some ideas on ways to modify the program to make it more useful to the average user.

Carol Link, Charlene Simpson, Lynda Boyer, Tanya Harvey and Joan Ojerio selected "show stopper" slides, photos that will provide a valuable resource for plant enthusiasts while also turning newcomers on to Oregon's natural flora. These photos will be part of the core collection in our plant photo gallery, soon to be available on the web. They also transferred slides to holders for archival storage.

Photo: Julie Kierstead Nelson

Bunchberry (Cornus unalaschkensis)

Thanks to Dave Predeek for leveraging volunteer time, energy and expertise to bring us closer to the launch of these online tools. Kudos also to our supporters for donating a day to the Oregon Flora Project!

Contact Thea Cook at (541) 737-2445 or cookthe@bcc.orst.edu if you are interested in volunteering. "Volunteer Tuesdays" are held on a regular basis and there are many other opportunities to participate.

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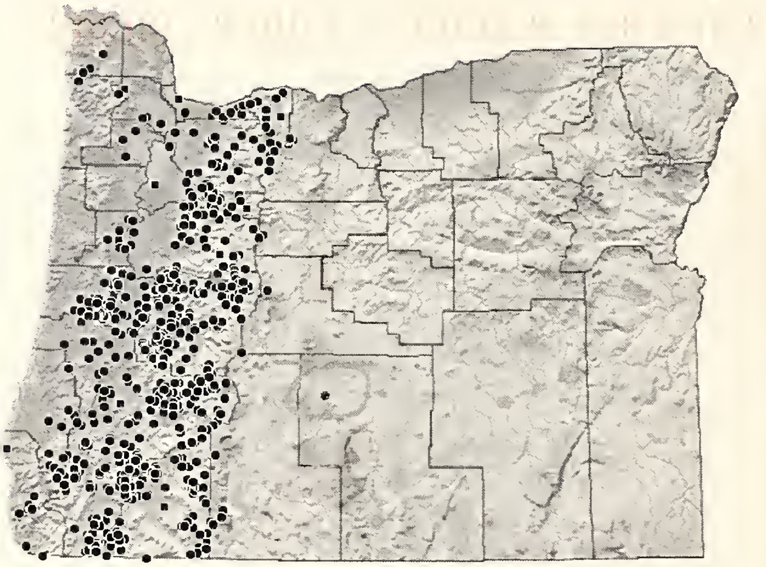
Did you know?

- At least 65 new species and varieties have been published based on plants that Albert N. Steward collected in southeastern China. Twelve of these new species were named in honor of Steward.
- Steward named seven new species, one variety, and made two new combinations.
- Steward also contributed to our knowledge of the Oregon flora. To date, 830 of his Oregon collections have been entered into the OSU Herbarium database.

Information from the International Plant Names Index, Harvard University Herbaria, New York Botanical Garden, and Oregon State University Herbarium databases. For more details, see:
www.oregonstate.edu/dept/botany/herbarium/steward



Oregon distribution of inside-out flower (*Vancouveria hexandra*)

Volunteers investigated locality dots that seemed out of place on maps such as this. In our database of over 227,000 records, errors can come from original data, its interpretation, or data entry. In this case the locality information was incorrectly entered as Range 13 East instead of 13 West. Most errors are caught during routine error checking, but some slip through. Volunteers can help enormously!

55

OREGON FLORA *Newsletter*

VOLUME 9, NUMBER 2 OREGON STATE UNIVERSITY JUNE 2003

Thomas Jefferson Howell (1842-1912): the untutored, impoverished botanist.

(This article is excerpted from a longer essay on Howell by co-authors Arthur R. Kruckeberg of the University of Washington and the late Robert Ornduff of the University of California, Berkeley.)

Thomas Jefferson Howell, Oregon's earliest pioneer botanist, was impoverished and largely self-educated, but nevertheless a man of great determination. He was born in Missouri in 1842, the youngest of five children of Benjamin and Elizabeth Howell. When Thomas was eight years old his family joined a wagon train bound for Oregon where they homesteaded on Sauvie Island west of Portland. Although the father was well educated and trained as a physician he failed to provide an education for his sons.

Thomas' formal instruction consisted of a mere three months at the island's first school; otherwise he and his brothers were self-taught. Early on, the young boy became interested in learning the names of the flowers that grew wild in his neighborhood. As he matured, his interest in botany grew and he began collecting and describing plants. In 1877 he published a 22-page *Catalogue of the Flora of Oregon, Washington and Idaho.*

See Howell, page 12

Photo: OSU Herbarium archives

Thomas Jefferson Howell in old age.

The Lane Community College Herbarium

by Nate L. France and Gail A. Baker,
Science Division, Lane Community College

In the spring of 2001, the 2,600+ pressed plant specimens formerly housed in a classroom and hallway at Lane Community College (LCC) in Eugene were moved to a library-herbarium specifically designed to accommodate the collection. This was the result of a remodeling and addition to the Science and Mathematics Building on campus. Our new space houses all the herbarium cabinets and provides counter workspace with full-length windows. We also have file cabinets and shelves for herbarium records, maps, reference works, floras, and a variety of herbarium materials. We are equipped with two computer ports for databasing and Internet access. The room (117A) is conveniently located adjacent to the Plant Sciences classroom. The new space provides increased opportunities for study, reference and research.

The LCC herbarium collection was initiated in the mid-1960s when the college was established. It has been registered in the *Index Herbariorum* at the New York Botanical Garden since 1967 when LCC biology instructor, Jay Marston, was curator. Two prominent LCC botany instructors, Dr. Rhoda Love and Freeman Rowe, have made major contributions to the collection over nearly four decades. Their additions have added diversity to the collection and they were stewards of the collection until their retirements approximately ten years ago. Both continue to be active in the botanical community and in their support and contributions to the herbarium. Various regional botanists and LCC students have also contributed to the collection.

The LCC collection is used predominantly for teaching and is utilized extensively by students in the botany major's course and in introductory spring field botany. The collection has also been an important reference for a variety of research projects and has filled loan requests from botanists working on various plant groups. In 1998, 26 specimens of *Trifolium* were loaned to Michael Vincent, the botanist responsible for the treatment of this genus for the Oregon Flora Project. Specimens of *Corallorhiza* (Orchidaceae), *Salix* (Salicaceae), *Lupinus* (Fabaceae), *Brodiaea (sensu lato)* (Liliaceae), and *Crataegus* (Rosaceae) have been studied and annotated by various botanists. The

See LCC Herbarium, page 10

LCC Herbarium, continued from front page

herbarium has also been an important resource for the newly published *Vascular Plants of Lane County Oregon.*

Despite its 30-year history, the LCC Herbarium's specimens had never been accessioned or completely inventoried. A project to database all sheets in the herbarium, coordinated by Clay Gautier (an Oregon Plant Atlas Project Leader) and assisted by LCC students, was initiated in October 2002; they report that label information for all past collections was successfully entered by June 2003. Clay and the students use software from OSU to record the information for each specimen. Data recorded includes: scientific name, annotations, collector's name, collection date, habitat, phenology (flowering, fruiting), associated species, and locale. Only vascular plants were accessioned, although the herbarium also houses some bryophytes, lichens, and marine algae.

According to counts from the database, the present LCC collection contains specimens from 103 families, 394 genera, and 1,007 species, subspecies and varieties. Of the 2,606 specimens accessioned, 1985 were from Oregon, 158 from Washington, and 110 from California. The remaining specimens include representatives from Mexico, Canada, and some eastern US states such as Tennessee and Rhode Island.

The oldest specimens in the herbarium are two sheets of *Asclepias mexicana*, collected in1936. Other notable specimens include *Lomatium bradshawii* (Bradshaw's desert parsley, collected before it acquired its rare plant status), and *Neviusia cliftonii* (Shasta snow-wreath, collected with a permit from the US Forest Service). Now that the database has been established, all new acquisitions will be entered, and we look forward to participating as a resource for the Flora and Atlas projects.

With its new room and on-going database, the LCC Herbarium has the potential to grow even more as a learning facility and tool for botanical research. The current Herbarium director, Gail Baker, welcomes contributions of specimens and materials. A dedication and celebration of the Herbarium is scheduled for May 2004 in coordination with the 25th annual Mt. Pisgah Arboretum Wildflower Festival.

See also:
Funk, V. 2002. "The importance of herbaria," *The Plant Press* 5(3): 6-7.

Erythronium oregonum logo and masthead designed by Tanya Harvey.

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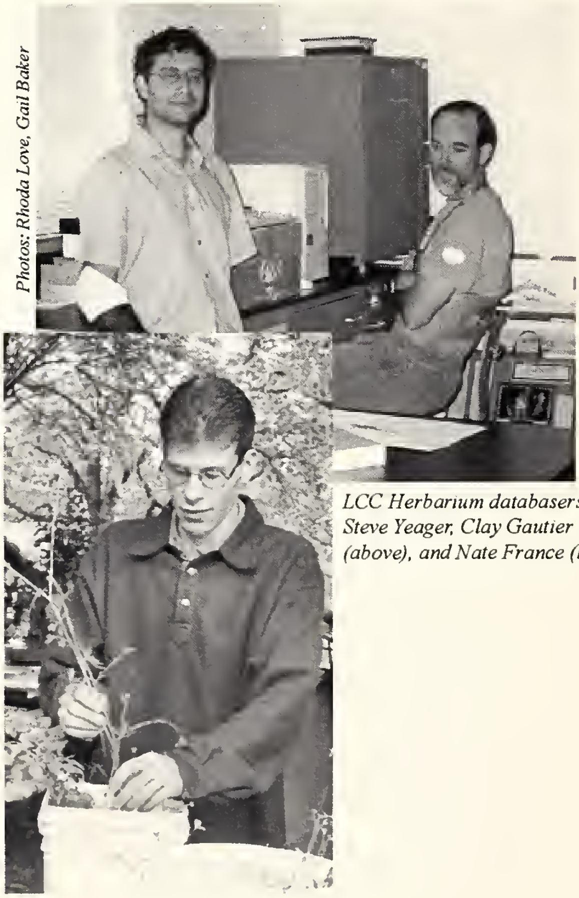

Photos: Rhoda Love, Gail Baker

LCC Herbarium databasers Steve Yeager, Clay Gautier (above), and Nate France (left).

Manzanitas – A study in speciation patterns

Part I: Overview of evolution in *Arctostaphylos*

by Kenton L. Chambers

In my recent treatment of the genus *Arctostaphylos* (manzanita) for the OregonVascular Plant Checklist, I recognized 8 species plus two commonly occurring named hybrids. This is hardly a drop in the bucket compared to the 57 species, some with several subspecies, that are recognized for California by P. V. Wells in his 1993 treatment for *The Jepson Manual – Higher Plants of California*. California is certainly the breeding ground for manzanita species, and the farther one goes geographically from that state, the simpler the genus becomes taxonomically. This is true of Oregon, where the northern and eastern regions have a limited number of easily distinguished species of *Arctostaphylos*, whereas the southwestern counties of Curry, Josephine, and Jackson are filled with intergradent and difficult-to-distinguish forms. Since I have had to put names on all the herbarium specimens from that region, I will discuss what I have learned about the evolutionary factors causing taxonomic variation in the genus.

Arctostaphylos columbiana, *common along the Oregon Coast and in the western Cascades. Note its bristly twigs. Illustration by Jeanne R. Janish from Hitchcock, et al.,* Vascular Plants of the Pacific Northwest. *Courtesy of University of Washington Press.*

Dr. Philip V. Wells, one of the principal authorities on manzanita taxonomy, has written a very useful, if idiosyncratic, book entitled *Manzanitas of California* (2000). The book has keys and descriptions for 61 species, some of which include several subspecies, along with discussions of morphological features, subgeneric groups, nomenclatural history, endemism, edaphic specialization, and hybrid evolution in the genus. Included are 149 diagrams, maps, and illustrations of varying quality and usefulness. In a sense, this work is only one authority's view of the taxonomy of this difficult genus, but I used it as a guide because I agree with much of what Wells says about the evolutionary processes that probably have influenced its patterns of variation and speciation. In particular, I agree with him that hybridization has been—and continues to be—an overriding factor for species formation in *Arctostaphylos*. This process is certainly going on in Oregon, and it is currently forming distinct populations that may themselves be an incipient species (see discussion of *A.* ×*cinerea* in Part II).

The Oregon species fall into three patterns of variability and geographic range: (1) widespread and relatively uniform, (2) restricted in range but relatively uniform, and (3) restricted in range, variable, and intergradent with co-occurring species. They also differ in habit, two of them being prostrate or essentially so, and the rest being erect and shrubby to almost arborescent. The two prostrate species—*A. uva-ursi* and *A. nevadensis*—form occasional hybrids with two of the shrubby species, *A. columbiana* and *A. patula*, to give low-growing plants with decumbent, upward curving branches. Two of our species *A. patula* (in part) and *A. glandulosa*—develop what is called a burl, a knobby enlargement of the base of the stem. This structure resists being burned in chaparral fires, even when the plant's stem and branches are killed, and it resprouts new stems in the year following the fire. All our other species, including *A. patula* in part of its range, are killed by fire and must regenerate from seeds present in the soil. On herbarium specimens, collectors practically never note whether a burl is present, although this sometimes can be the deciding key feature, e.g. of *A. glandulosa* in Oregon. I urge that in the future, if you are collecting specimens of manzanita in southern Oregon, you always note on your label the habit of the plant (height and whether erect or prostrate) and the presence or absence of a burl. Species determination, in that region of the state and in adjacent California, is often not possible without this information.

The fact that such a large number of species of *Arctostaphylos*—57—are presently recognized in California, while numerous others have been described in the past but are placed in synonymy, suggests that quite powerful forces favoring rapid speciation have been at work in that state. Manzanitas are all very similar in their flower morphology and have a similar pollination syndrome, the differences between species being mainly in the vegetative parts of the plant. Hence speciation has usually involved changes in vegetative and physiological adaptations. Related species, particularly ones that are localized in distribution, very often occupy separate habitats with unique soil types. We noted this with *A. canescens* and *A. viscida* in Josephine County, Oregon, but it occurs much more frequently in California. Speciation there often involves genetic recombination leading to ecological specialization. If the specialization is to a geographically localized substrate, such as an isolated occurrence of a peculiar type of soil, the resulting species population will itself be local and rare. On page 122 of his book *The Manzanitas of California*, Philip Wells gives a map of nine taxa (eight species, one with two subspecies) in the vicinity of San Luis Obispo, occupying different substrates: one on granite, one on sandstone, three on Pleistocene sands, one on serpentinite, and three on Monterey shale. Still another localized endemic species is found nearby on an area of volcanic dacite.

Wells devotes a chapter of his book to "Reticulate Evolution in *Arctostaphylos*," with a section headed "Speciation Via Hybridization at the Diploid Level." He gives examples of how various rare species like these will combine the morphological characteristics of particular pairs of species growing in nearby regions. These parental species may themselves be either rare or widespread. One rare species, *A. mewukka* of the Sierra Nevada, is cited as a probable tetraploid,

Manzanitas, continued on page 12

Manzanitas, continued from page 11

alloploid hybrid between the two common species *A. patula* and *A. viscida*. In a list of 46 restricted endemic species, he suggests for 36 of them the particular parental species combination that produced that one through hybridization. In a separate list of 15 wide-ranging species—seven of which are in Oregon—only *A. nevadensis* is suggested to have had a hybrid origin (*A. uva-ursi* X *A. patula*), and interestingly, a chromosome count of *A. nevadensis* shows 2n=52, the tetraploid number and hence a possible allopolyploid, hybrid condition.

New species continue to be discovered and described in California and Baja California. How long it will take to find and name all these odd products of hybrid evolution is uncertain, but taxonomists seem to enjoy the challenge provided by this genetically plastic genus. In Oregon, our challenge is different: to make accurate and well-documented field observations on our manzanita flora, identifying the occurrence of hybrids and of unusual burl-producing species such as *A. glandulosa*. We who work with herbarium specimens need all the help we can get from active field-oriented researchers, willing to make good collections with accurate and complete field labels.

I will close with a quote from Ledyard Stebbins, one of the best known students of plant evolution of the 20th Century: "Hybrid swarms... are particularly favorable gene pools from which new adaptive gene complexes may be constructed. In this way, climatic and edaphic diversity, occurring on ecotones or border regions between different biotic provinces are factors which most actively promote the evolution and differentiation of species of higher plants." (G. L. Stebbins and J. Major 1965).

References:

Stebbins, G. L., and J. Major. 1965. "Endemism and specation in the California flora," *Ecol. Monogr*. 35: 1-35.

Wells, P. V. 2000. *The Manzanitas of California*. 151 pp. Privately published. Lawrence, Kansas.

(Part II: Summary of the Oregon taxa of Arctostaphylos *will appear in the February, 2004 issue of OFN.)*

Howell, continued from front page

Rather than working on the Sauvie Island farm with his brothers, Howell began to travel widely throughout the Northwest collecting plants that he pressed and sold as a source of income. He advertised his specimens via lists which he sent to prospective customers, the price varying from four to ten cents per sheet. Because of the lack of accessible references for identification, he was obliged to send his specimens to botanists elsewhere for naming. His early coterie of identifiers included Asa Gray, George Vasey, Liberty Hyde Bailey, and Sereno Watson.

Howell's field notebooks have not survived, but his specimens reveal many of his collecting localities: the Columbia River, Mount Hood, John Day Valley, Steens Mountain, Harney Valley, Southwest Oregon, Tillamook, The Dalles, Mount Adams, Northwest California, Wasco County, and Southeast Alaska. Early in his career Howell made two significant discoveries. The first was a small aquatic plant collected jointly with his brother Joseph on Sauvie Island and described in 1879 as *Howellia aquatilis* by Asa Gray who dedicated the new genus to its "discoverers who are assiduous collectors and acute observers and who have already much increased the knowledge of the botany of Oregon."

His second major discovery was made in 1884 when he collected a new species of spruce at Happy Camp, California. The following year the tree was described by Sereno Watson—however it was not named *Picea howelliana* but rather *P. breweriana*, after William Brewer, co-author with Watson of the *Botany of California*. Ironically, twenty years earlier, Brewer had visited Happy Camp where he almost certainly encountered, but did not recognize as new, the spruce that was later to be named for him rather than for Howell, its true discoverer.

Howell was one of the first western botanists to recognize the importance of edaphic factors in plant distribution. Writing to Willis L. Jepson in 1895 he described the habitat of *Darlingtonia californica*: "The geological formation is a peculiar kind of serpentine and much of the lower part of the mountain is well supplied with springs that run clear water all year round." Howell had earlier touted the significance of geology for plant distribution in *Popular Science Monthly* in 1883 when he pioneered the idea that land forms and rock outcrops fashion the distribution and particular habitats of plants.

Howell's most remarkable achievement was the writing of his *Flora of Northwest America*. For years he gathered information for a compendium of the flora of our region, and began writing it in 1882 when he was 40 years old. Portland printers apparently were unwilling to cope with the author's technical terminology and his often-illegible handwriting, so Howell himself set the type and delivered it to the printer. His scanty formal education was reflected in his idiosyncratic and inconsistent spelling—he was more accurate with technical terms than with ordinary English. Portland botanist Martin W. Gorman corrected proofs, but numerous errors slipped by him. In March 1897, the first fascicle appeared, consisting of 112 pages and priced at 50 cents.

Jepson reviewed this fascicle noting that the work was "cyclopedic" and that "no other botanist knows so well the plants of these states." Despite this praise, neither the sale of plant specimens nor of his book was sufficient to support Howell financially. He married at the age of 50 and struggled the rest of his life to support his wife and two sons. On Sauvie Island he worked as a postmaster, and at various times ran grocery stores and a laundry. At one point he manufactured mittens on a sewing machine earning seven cents a pair. In 1903 Howell donated his personal collection of approximately 10,000 specimens to the new University of Oregon Herbarium; in payment he received $500 for curating the sheets.

Subsequent fascicles of Howell's *Flora* appeared at irregular intervals, with the seventh and last published in August 1903, nine years before his death. One thousand copies were printed; the few that remain are now collector's items. The *Flora* consists of 792 pages and describes 3,150 species of which 89 were newly described by Howell. The combined volume was priced at five dollars and was a financial failure for Howell. Nevertheless, while state floras for our region were issued in subsequent years, Thomas Jefferson Howell's remarkable regional flora was not superseded until the 1955 appearance of the first volume of *Vascular Plants of the Pacific Northwest* by C. Leo Hitchcock, Arthur Cronquist, Marion Ownbey and J. W. Thompson.

Project news and the 80,000th specimen databased!

By Scott Sundberg

We are getting ready to go public with the Oregon Plant Atlas and the Oregon Flora Photo Gallery. This means that we have reached the stage of "beta testing," "usability engineering," "quality control," "website design" or whatever names you'd like to use to describe the final stages of preparation. These projects are as active as ever, thanks to the efforts of Thea Cook and Ann Willyard, who have been supervising most of the dozen students and volunteers now working on these tasks; and to Sherry Pittam, Wilson Mbugua and others at the Northwestern Alliance for Computational Science and Engineering who have been working on Digital Field Guide design. The online Atlas has undergone review by project leaders and will be modified based on their comments. Review by other selected people is also under way. Along with the review we are seeking signed consent forms for using species lists in the Atlas. So far, over 130 people have responded to our request.

The OSU Herbarium is busy for other reasons as well. Aaron Liston and Scott Sundberg received a 3-year grant from the National Science Foundation to enter specimen label data from all remaining Oregon specimens of vascular plants in the herbarium. We estimated that this would include about 156,500 specimens, 50,000 of which were databased for earlier projects. In late July we reached the half-way point of databasing the collections and celebrated the databasing of the 80,000th specimen with many volunteers and friends. The databasing project also involves adding latitude and longitude coordinates for all specimens, which will allow us to include these records in the online Atlas.

Databasing celebration, July 27th. Clockwise from lower left: Thea Cook, Ken Chambers, Richard Halse, Aaron Liston, Glenn Halliday, Ann Willyard and Diana Wageman. Center: Barbara Wilson and Don Roberts. Photos by Rhoda Love.

Thanks

Thanks to the Native Plant Society of Oregon and its Klamath Basin Chapter; Portland Garden Club, Friends of the Delbert Hunter Arboretum, and the Tektronix Foundation. Thanks to Sara Barnum, Joyce Beeman, Susan Bodin and John Reynolds, who donated in memory of Ruth Hansen, and to Margaret Thiele, for her donation in memory of Jack Hausotter.

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A special thanks to over 130 people who have sent in consent forms for using species lists in the online Atlas.

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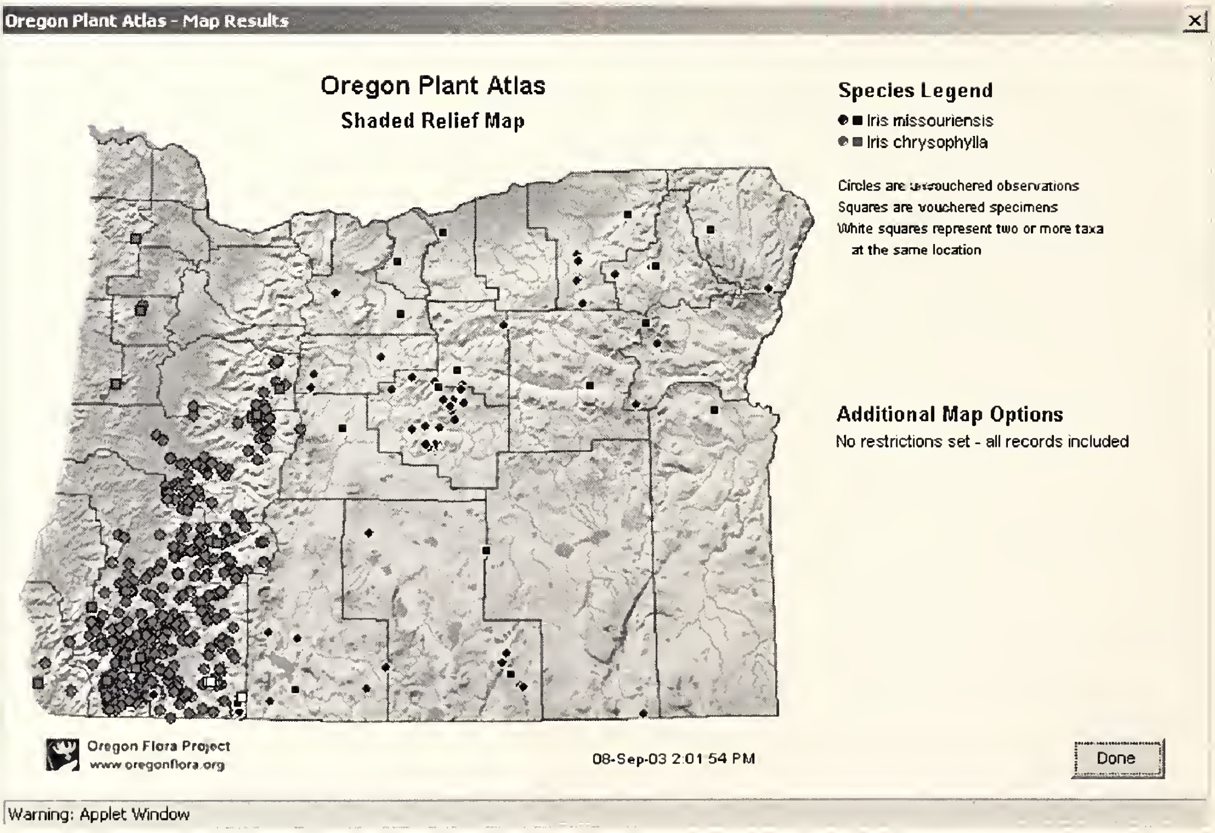

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Example of a page from the upcoming online Oregon Plant Atlas (see p. 13). Online version is in color.

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OREGON FLORA
Newsletter

VOLUME 9, NUMBER 3 OREGON STATE UNIVERSITY OCTOBER 2003

Almeta Barrett: A pioneer woman botanist in Oregon

by Robin Lodewick

Only a few women, as far as we know, collected new plants in the early Pacific Northwest, sending them to the Eastern botanical establishment for naming. One of these was Almeta Hodge Barrett, an Oregon pioneer. Almeta was the wife of a former Civil War surgeon, Dr. Perry Barrett, who began a medical practice in Pennsylvania following the war. After losing nearly everything to a fire however, the couple chose to start over in the west. In 1871, with year-old daughter Julia, the family traveled to Portland, then up the Columbia to where Hood River joins the mighty River of the West. There, in the fertile Hood River Valley, the family established their homestead.

The Barretts built a two-story house and barn and the doctor began to accept patients. Almeta may have acted as nurse for her husband; she wrote in an 1882 letter that they would both be away from home, because the doctor had to remain at the bedside of a sick patient. However, as daughter Julia grew older, and Almeta's parents came west

See Barrett, page 18

Photo: Hood River County Historical Museum Archives

Almeta Barrett with daughter Julia and husband Dr. Perry G. Barrett, 1882.

Manzanitas – A study in speciation patterns

Part II: Summary of the Oregon taxa of *Arctostaphylos*

by Kenton L. Chambers

For the Oregon Vascular Plant Checklist, we are recognizing the following 8 species of manzanitas as occurring in the state. This is many fewer than the 57 species, with accompanying subspecies, found in California according to the treatment by P. V. Wells in *The Jepson Manual*. Two rare species of northern California cited by Wells, *A. klamathensis* and *A. nortensis*, are found just south of Oregon but have not yet been discovered in this state. As mentioned in Part I of this article, most of the taxonomic complexity in Oregon manzanitas is seen in Curry, Josephine, and Jackson counties. It is important to observe population variability and to take careful notes on habit and burl development, when collecting specimens in that part of Oregon.

(1) *Arctostaphylos uva-ursi* (L.) Spreng.—This is the familiar "kinnikinnik," a fully prostrate plant that differs from other species in having a shiny upper leaf epidermis that completely lacks stomates, together with distinct stomates on the lower leaf surface. The other prostrate species, *A. nevadensis*, has dull upper and lower leaf surfaces with indistinct stomates on both sides; its leaves are more acute than the obtuse leaves of *A. uva-ursi*. Kinnikinnik ranges widely to the northeastern United States, the Rocky Mountains, Alaska, and Eurasia. In Oregon it occurs on the immediate coast and in the Cascades, Blue Mountains, Wallowas, Siskiyous, and Steens Mountain.

Where *A. uva-ursi* co-occurs with the shrubby *A. columbiana*, one occasionally finds their hybrid, *A.* x*media*. I have also seen hybrids between *A. uva-ursi* and *A. patula* in *Pinus ponderosa* woods near Camp Sherman, Jefferson County. There is no hybrid name for them in common use. Probably very little gene exchange, beyond the initial F1, arises from either of these hybrids. In an analysis of *A.* x*media* in western Washington and northwestern Oregon, A.R. Kruckeberg (1977) speculated that "(u)nder conditions of forest succession…(h)ardly more than the formation of F1 hybrids and a trickle of introgression may take place before the trend is stopped by succession and hybridization ceases."

(2) *Arctostaphylos nevadensis* A. Gray—This species ranges from western Washington southward, especially in

See Manzanitas, page 16

Manzanitas, continued from front page

the Cascades and Siskiyous, to northern California and the Sierra Nevada. In Oregon, it is not on the immediate coast, but it goes east as far as the Blue Mountains. *Arctostaphylos nevadensis* seems not to hybridize with *A. uva-ursi*, but hybrids are known with *A. columbiana* from the Mt. Hood area (Kruckeberg 1977). The establishment of hybrids was probably favored by habitat disturbance due to prehistoric mudflows from the volcano. In the Siskiyous, it may hybridize with various shrubby species; however, this can only be observed through field studies, because herbarium sheets are usually just a collection of twigs and lack notes about plant height and habit. One such hybrid may have been the source of the plants named *A. parvifolia* by Thomas Howell early in the previous century.

(3) *Arctostaphylos patula* Greene—This shrubby species with broadly ovate-lanceolate leaves is the dominant manzanita in the ponderosa-pine zone on the east flank of the Cascades. Plants of this region lack a burl and reproduce from seeds following a fire. The species is also common in the Siskiyous, where it very often possesses a burl at the stem base. It has been debated whether these two growth forms should be named as separate species or subspecies, but Wells has argued that the difference between them is minor and inconsistent (*The Manzanitas of California*, page 131).

I believe that if field research shows *A. patula* to be regularly burl-forming in the part of its range that includes the Siskiyous, and non-burl-forming in an extensive area on the east side of the Cascades, then a subspecific separation for the two populations would be useful. The leaves of *A. patula* are glabrous except for a fine golden-glandular puberulence on the petioles and leaf bases. The species is very wide-ranging, from southern Washington through the Cascades and mountainous California to northern Baja California, and disjunctly to parts of Utah, Arizona, and the Rocky Mountains. The distribution of burl-forming populations over this range has not been mapped as yet, although Wells states that "(o)ver most of its wide range, burl formation is lacking".

(4) *Arctostaphylos columbiana* Piper—Also widespread in Oregon, this shrubby species has broadly lanceolate leaves with dense, short, white pubescence, which Wells characterizes as "tomentose," along with longer, bristly-hispid, sometimes gland-tipped hairs. The conspicuous bristly hairs may extend to the rachises and bracts of the inflorescence. The species' range is coastal and inland to the western slopes of the Cascades, from southern British Columbia south to Sonoma County, California. On the coast, it meets and occasionally hybridizes with *A. uva-ursi*, as noted above.

A confusing feature of the variation in *A. columbiana* is that some plants, or even whole populations, may be missing the bristly hairs expected for this species. These plants occur within the usual northern range of the species (e.g. Hood River, where L. F. Henderson collected many such plants), and are probably simple genetic mutants. However, things become confusingly variable in southern Oregon, from Coos County south, where *A. columbiana* comes into the range of *A. canescens*, another species with short, matted white hairs on its leaves. *Arctostaphylos canescens* is characterized as lacking any bristly hairs. Therefore, to my eye, there is no difference between its pubescence and the bristleless forms of *A. columbiana* mentioned above. The overall form of the inflorescence, with its well-developed leafy bracts, is also similar in the two species. Therefore, my suggestion when collecting manzanitas in the Siskiyou Mountains is to take a population approach to this group: evaluate whether a given population is predominantly bristly, and if so, call it *A. columbiana*. If bristly plants are rare in the population, then it probably represents *A. canescens* with some genes of *A. columbiana* obtained through hybridization. If herbarium specimens are collected, be sure to note your observations on the label!

(5) *Arctostaphylos viscida* Parry—This species is common in the upper Rogue River Valley and surrounding foothills, and it extends south to the Illinois River Valley where it meets and hybridizes with *A. canescens*. Where it

Manzanitas, continued on next page

Erythronium oregonum logo and masthead designed by Tanya Harvey.

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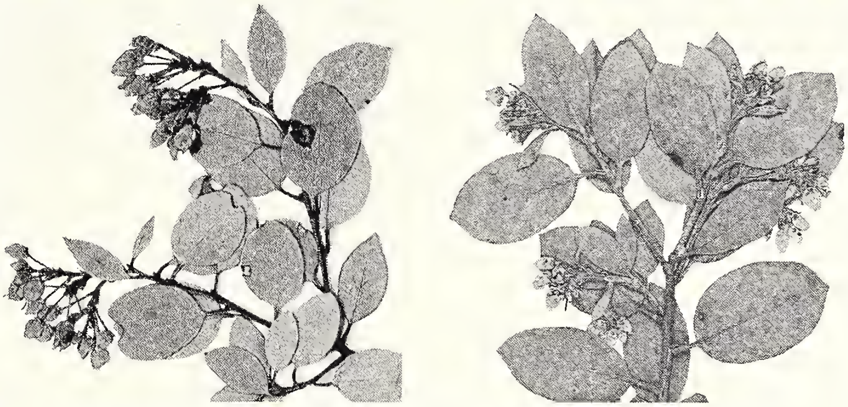
Manzanitas, continued from previous page

is not involved in hybridization, it is quite uniform and distinctive, with large, glabrous, grayish leaves, open inflorescences with only very small bracts, and dense glandular pubescence on the long floral pedicels as well as sometimes on the twigs and ovaries. An unusual feature of its ecology is that in the Illinois River Valley it is limited to serpentine soil, but north and east of there it shows no such specialization. Wells recognizes three subspecies for this species (see *The Jepson Manual*, pages 558-559), one of them being ssp. *pulchella*, named for a species described from Josephine County by Thomas Howell. Unfortunately, these are single-character subspecies, based entirely on the distribution of glandular hairs on the twigs, pedicels, and ovaries of the plants. In ssp. *pulchella*, the ovaries are said to be glandular-bristly. However, on the type specimen of *A. pulchella* collected by Howell, the ovaries are glabrous, and this was noted in his published description as well. Therefore, Wells' description does not match the type of the name. In southern Oregon we find examples of all three pubescence types representing all three "subspecies," and the pattern here seems to be one of simple genetic variation not worthy of taxonomic recognition.



Arctostaphylos viscida, *left, and* A. canescens, *right, the parent species of the hybrid* A. x cinerea *in southern Josephine County.*

Of more significance for *A. viscida* is its extensive hybridization and introgression with *A. canescens,* principally in the Illinois River Valley of Josephine County. We are indebted to Leslie Gottlieb (1968) for clarifying the taxonomic confusion surrounding such hybrids. At one locality, the abandoned mining town of Waldo, he showed that human disturbance had caused soil mixing which allowed hybridization and introgression to blur the distinctions between *A. canescens*, a non-serpentine species, and *A. viscida.* At this locality, Thomas Howell had collected the type specimens of several "new species," which he described in 1903 (*A Flora of Northwest America*, pages 416-417). Upon analysis, all but one of these proved to be hybrids. Elsewhere in the Illinois Valley, one also finds many plants that, from their morphology, probably have a similar hybrid origin. In the alluvial valley flats south of Cave Junction, serpentine and non-serpentine rocks and soil are mixed naturally, and a large population of manzanitas has developed. These plants appear to combine the genes of *A. canescens* with those of *A. viscida*.

We are using the name *A.* x *cinerea* Howell for this and similar populations, the name being based on one of the hybrid plants collected by Howell at Waldo. Plants of this type usually have leaf pubescence that is less dense than typical *A. canescens*, a more open inflorescence with shorter bracts than in that species, and longer floral pedicels with some glandular hairs on them. The hybrid population on alluvium is very extensive, and it might persist to form the nucleus of a distinctive new species in that region. As discussed previously in Part I, hybrid speciation is considered to be common in this genus, mainly in California.

(6) *Arctostaphylos canescens* Eastw.—The hybridization between this species and *A. viscida* is discussed above. In Oregon *A. canescens* occupies the Siskiyou Mountains of Josephine and Curry counties (perhaps also southern Douglas and Coos counties). It is distinguished by its densely canescent to white-downy leaf pubescence and condensed inflorescences with long floral bracts. It avoids serpentine-derived soils. The overall range extends south to central California, where it is a common component of chaparral vegetation. In Oregon it seems to intergrade with *A. columbiana*, as described above under that species.

(7) *Arctostaphylos hispidula* Howell—This quite localized shrubby species is found in Josephine and Curry counties as well as adjacent Del Norte and Humboldt counties. It has small lance-elliptic leaves, 1.5-3 cm long, which are minutely glandular in a pattern that is reminiscent of *A. patula*. The inflorescence is distinctive in being branched and open, with no large floral bracts. Field notes indicate that it grows in serpentine soils, and on the whole it remains distinct from the other species found in southwestern Oregon.

(8) *Arctostaphylos glandulosa* Eastw.—The characteristic that best marks this species is the presence of a burl; other than this, it is extremely variable. It ranges from southwest Oregon through the California Coast Ranges to northern Baja California. Both glandular-pubescent and non-glandular forms are known, making the species epithet ambiguous. It is very poorly known in Oregon, mostly due to the absence of field studies that would provide information on burl formation in the manzanitas of Josephine and Curry counties. Herbarium specimens without the necessary label data are of little use, because glandular pubescence is known in non-burl-forming species such as *A. columbiana* as well, and the twigs of A. glandulosa may be tomentose and bristly as in *A. columbiana.* Much remains to be discovered about this species in our state. Oregon plants are assigned to ssp. *glandulosa*, which also occurs in California along with five additional subspecies, according to Wells (*The Jepson Manual*, Page 551).

References:

Gottlieb, L. D. 1968."Hybridization between *Arctostaphylos viscida* and *A. canescens* in Oregon." *Brittonia* 20: 83-93.

Howell, Thomas. *Flora of Northwest America.* 1903.

Kruckeberg, A. R. 1977. "Manzanita (*Arctostaphylos*) hybrids in the Pacific Northwest: effects of human and natural disturbance." *Syst. Bot.* 2: 233-250.

Barrett, continued from front page

for an extended visit, Almeta had fewer duties at home. Now she could join Perry in exploring the valley for new plants as they both loved to do. Many of the unusual flowers Almeta transplanted to her garden where she could watch them develop and collect seeds.

Doctors were trained in botany in those days, and Almeta may have learned from her husband or studied the subject herself. By 1878 – they had found a companion in their botanical forays. Louis Henderson, then a Portland high school teacher, spent summers at Hood River where his mother had a home. Henderson later wrote that the Barretts were as fascinated with the Northwest flora as he was. The three "scoured the valley," bringing armfuls of flowers back to the Barrett house, where they happily spent days identifying them. Specimens they could not name were sent to Asa Gray and Sereno Watson at Harvard, perhaps to be published as new species.

Three type specimens at Harvard list Mrs. Barrett as collector. Her most famous find was a blue-green-leaved, rose-purple penstemon found on cliffs near Hood River and across the Columbia. Asa Gray named it *Pentstemon barrettae* in 1886 – that is, "Mrs. Barrett's penstemon." The name is spelled *Penstemon barrettiae* today. A second species, *Anemone oregana*, covers the forest floor in much of western Oregon, but its type location is Hood River. The third species, *Cimicifuga laciniata*, was discovered by Almeta and Henderson together in 1882 at Lost Lake. The species grows only in that location and just to the north in Washington. A large collection of fawn lilies, made by Almeta near Lost Lake, was used by Watson in writing his "A Revision of the American Species of *Erythronium*" in 1891.

The Barretts returned frequently to Lost Lake on the northeast shoulder of Mt. Hood. Almeta called it that "deep, triangular sheet of blue water" in a letter to Asa Gray. At times they found themselves there, at over 3,000 feet, before the snow was gone.

Almeta wrote, in one surviving letter to Gray, of reaching for an unusual *Dodecatheon* across a "yawning fissure" at the edge of a snow bank, then starting to lose her footing, and having to leap across the chasm – one reason perhaps why her friends remembered her as "willing to brave almost any hardship to find a new or rare plant." She writes of several trips across the Columbia and up the White Salmon River to Mt. Adams.

Photo provided by Lonnie Wick

The widow Almeta Barrett at age 85. She had left Oregon and returned to the East to raise her daughter Julia's orphaned twin sons.

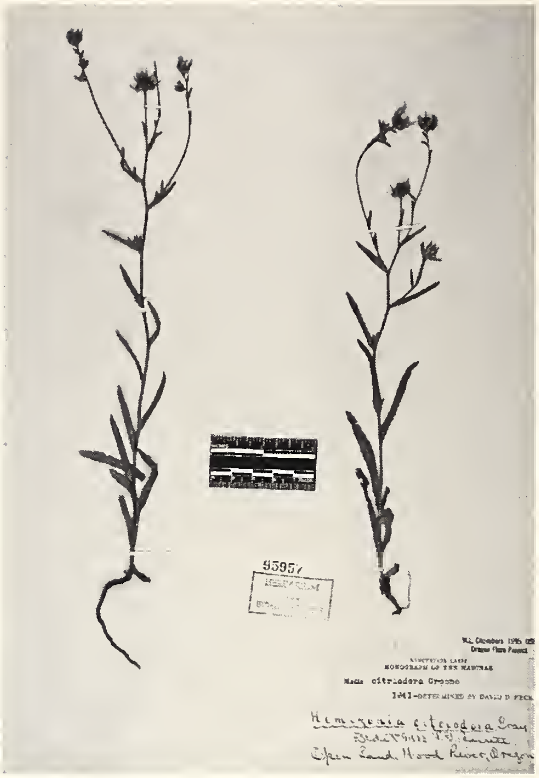


Photo: OSU Herbarium

Specimens of Madia citriodora *collected in 1884 near Hood River by Almeta Barrett and donated to Louis Henderson, who composed the label. Later annotations are by David Keck, the monographer of the genus, and Kenton Chambers, who reviewed it for the Oregon Flora Project.*

But life in Hood River was about to change. The railroad came through the Gorge on its way to Portland. Julia, age fourteen, was sent East for a year of high school and then to newly-opened Wellesley College. By 1891 she had married and departed with her husband to live in Honduras. There she caught the "Honduras fever," came back to her parents for care, but died in 1892, leaving newborn twin sons. Almeta had always coped; now, at sixty, she would raise Julia's sons. But fate was against her. One day in 1900, Perry went to the barn to tend his prized Jersey cows and did not return. He had "dropped dead of heart failure," according to a biographer of the valley's pioneers. The remnants of the Barrett family, Almeta and her grandsons, returned east to New York. Probably she had relatives there. We know only that Almeta died at 92 in New York, and one grandson married shortly thereafter.

Thinking of Almeta's life, today, it may seem tragic that she could not devote herself to the scientific study she loved. Then, looking at her face, one sees her differently. She was a kind, firm, capable, intelligent woman. She did what it was her share to do, without regret. And, after all, she has a gorgeous penstemon named for her.

Project News

by Scott Sundberg

The late publication of this issue allows me to include Flora project news through February, and a great deal has happened since the last issue! Most notable is the recent, semi-public release of the online Atlas mapping program. A "Preview Version" was announced to members of the Native Plant Society of Oregon and we have received valuable feedback from them. Some important upgrades will be implemented before we announce the website to the general public. The next issue of the OFN will be devoted to the online Atlas.

Another milestone was reached in the OSU Herbarium last month, when the database of label information from Oregon plant specimens exceeded 100,000 records. This was celebrated with a potluck lunch hosted by the herbarium and a slide presentation on the Flora project by Linda Hardison.

Recently Mildred Thiele, one of the *grandes dames* of botany in Douglas County (OFN 1(2):6), has generously donated her collection of almost 5000 photographic slides of Oregon plants to the OSU Herbarium. This beautiful and well-documented collection of slides spanning the years 1984-1992 is an invaluable resource. Images from the collection will be available to a wide audience through the Oregon Flora Photo Gallery.

Thanks and best wishes to Ann Willyard, who left the Flora project in September to begin graduate studies in the Dept. of Botany and Plant Pathology here at OSU. Ann was one of our first full-time staff members, and for two years provided leadership in establishing database structure for the Flora project. Good luck, Ann. We miss your full time involvement in the project and appreciate the help you continue to provide.

Welcome to Katie Mitchell, who joined our staff in January. She hails from the Seattle, Washington area, and is applying her skills in botany, database management, and GIS (geographic information systems) to Flora project and herbarium specimen databasing tasks.

In Memoriam: Bonnie Hall and Jack Hausotter

by Linda Hardison

The Oregon Flora Project honors the memory of two native plant lovers who have recently passed away: Bonnie Hall and Jack Hausotter. Bonnie Hall died of pancreatic cancer February 18, 2004. She contributed to the scientific community for 30 years as an illustrator in Entomology at Oregon State University. In the early 1990s Bonnie shifted her focus to an interest in native plants by creating screen serigraphs of flowers and ferns. Bonnie was an avid and generous supporter of the Oregon Flora Project. Upon the formation of the Friends, she donated 20 serigraphs of the Oregon fawnlily (*Erythronium oregonum)* to be presented to significant donors. While she will be deeply missed, her warmth will persist through her beautiful artwork.

Jack, a teacher, columnist, and naturalist, embodied a passion and intimate understanding of the natural surroundings of his Douglas County home and beyond. He died August 6, 2003. The Friends of the Oregon Flora Project will gratefully accept and acknowledge contributions honoring the lives of these two special individuals.

Serigraph of fawnlilies created by Bonnie Hall.

Thanks

Many thanks to over 140 loyal individuals who have contributed to the Flora project since last summer. All your names will appear in the February issue of the Oregon Flora Newsletter. The next newsletter will also list those who have helped by volunteering or sending species lists or specimens.

Thanks to the Native Plant Society and its Portland, Siskiyou, and Umpqua Valley Chapters for their generous support, and to Emerald Chapter for its welcome donation from sales of the Lane County Checklist. Umpqua Chapter NPSO has sent donations in memory of Jack Hausotter; Bonnie Brunkow Olson has donated in memory of Madeline Marttalaj; and Veva Stansell in memory of Marion "Butch" Jarman.

Gift contributions have been received for Mike and Nancy Fahey from Dennis and Jean Fahey; and for Don Heller and Urban Kubat from Lynne Heller.

Would you like to make a donation?

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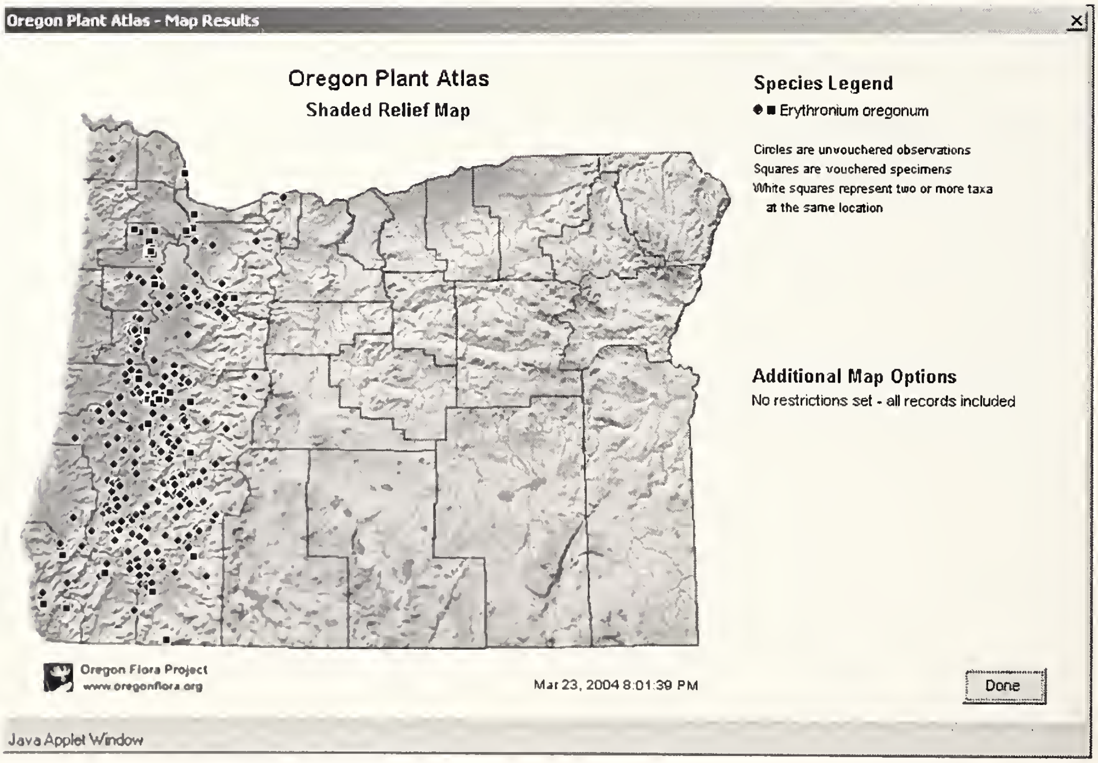

Oregon Plant Atlas
Shaded Relief Map

Species Legend
● ■ Erythronium oregonum

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Distribution of the Oregon fawnlily (Erythronium oregonum), *from the upcoming online Atlas.*